

**In the Drawing:**

Please accept the attached single drawing sheet with amended figures 1 and 2.

Labels have been added to the drawing to improve the illustration of the invention by making it easier to identify the parts of the claimed invention. Approval of the changes in the drawing and entry of the drawing changes is respectfully requested.

# REMARKS

This is a simultaneous amendment with a request for continued examination filed in response to the final Office Action dated November 24, 2006.

## I. THE SUBJECT MATTER OF THE NEW CLAIMS

New claims 5 to 10 have been filed and all previously pending claims have been canceled.

New independent claim 5 contains distinguishing features and limitations that were not present in the amended claim 1. However some of the features in new claim 5 were present in canceled claim 1.

The new limitation that the “fuel cell (8) ...produces electrical energy (9) from said fuel (6) when said fuel (6) is supplied to the fuel cell” is based on the disclosure in applicants’ fig. 1 and specification on page 2, lines 8 to 16, where the specification states that “the fuel cell ... supplies the blower 7 with electrical energy 9” and the “fuel reservoir 10 for the liquid fuel 6 ... communicates with the fuel cell via a line 20, a valve 11, and a line 21” and “Pressing on the actuating device 18 opens the valve 11, and as a result the fuel cell immediately furnishes electrical energy 9 to the blower 7”. Furthermore the particular preferred fuel cells described on page 2, last two lines, and lines 1 to 15 of page 3 of applicants’ specification are known to operate by converting the chemical energy in a fuel that is supplied from outside of the fuel cell to electrical energy in the fuel cell.

The feature that the fuel reservoir 10 is not within or is outside of the fuel cell 8 is fully supported by the drawing figure 1 and the description on page 2 of the originally filed specification.

The feature of claim 5 that “an electrically powered blower (7) that generates an air stream when said electrical energy (9) is supplied to the blower (7)” is supported by page 2, lines 7 to 8, of the applicants’ originally filed specification. Note that figure 1 shows that the air stream 14 immediately leaving the blower is not heated. Air stream 14 is heated by the heating element 5 to produce the desired product, namely the hot air stream 2.

The features regarding the “heating element 5” in the new claim 5 are fully supported by lines 2 to 4 of the canceled claim 1 and the disclosures on page 2 of the applicants’ originally filed specification.

The means for jointly connecting the fuel reservoir 10 to the fuel cell 8 and the heating element 5 recited in the last paragraph of new claim 5 is fully supported by the disclosure on page 2 of the specification from lines 10 to 16.

Dependent claim 6 includes features from canceled dependent claim 3 and from the last paragraph on page 3 of applicants’ specification.

Furthermore the “means for jointly connecting” of claim 5 has been further defined in dependent claim 7, which is explicitly based on the wording between lines 10 and 13, of page 2 of applicants’ specification.

Dependent claim 8 includes the features from canceled claim 4.

Dependent claim 9 regarding the filling valve for the reservoir 10 is based on page 2, lines 19 to 20, of the originally filed specification.

Furthermore new dependent claim 10 claims preferred types of fuel cells for use in the applicants' invention, namely a polymer electrolyte membrane fuel cell, a direct methanol fuel cell, and a solid oxide fuel cell. The basis for new dependent claim 10 is found on page 2, line 27, to page 3, line 11. It is well known in the fuel cell arts that these types of fuel cells convert the chemical energy stored in a fuel, such as hydrogen, to electrical energy when the fuel is supplied to the fuel cell and appropriate further prior art references could be filed to support these facts and describe these types of fuel cells further.

## **II. ANTICIPATION REJECTION BASED ON CHOI**

Claim 1 was rejected as anticipated under 35 U.S.C. 102 (b) by Choi (US 5,155,925).

Claim 1 has been canceled, obviating the rejection of claim 1 as anticipated by Choi. New independent claim 5 replaces canceled claim 1 as the main claim. It is respectfully submitted that the disclosures of Choi do not anticipate the new independent claim 5.

The primary distinguishing feature of claim 5 that distinguishes its subject matter from the prior art is the use of the fuel cell (e.g. like those of dependent claim 10) instead of a rechargeable battery, as in e.g. US Patent 5,857,262, which is described in the background section of the application. This avoids the need to recharge a rechargeable battery and allows the same fuel that is supplied to the fuel cell to be used by the heating element to heat the air stream

from the blower.

In contrast to applicants' claim 5 Choi does not disclose a hair dryer in which a fuel cell is used to provide electrical energy for operation of the blower 12 of Choi. Instead Choi provides rechargeable battery 17 to provide electric power to their blower 12.

Furthermore the fuel stored in the fuel reservoir 3 of the hair dryer of Choi is only supplied to the heating device, which is a gas burner 6. It is not jointly or simultaneously supplied to a fuel cell or to battery 17. It is not supplied to the rechargeable battery 17 because there is no way for the rechargeable battery to utilize a fuel, such as LPG, since it holds all chemical ingredients necessary to produce the electricity internally.

In addition, Choi does not disclose or suggest "means for jointly connecting" the fuel reservoir to the heating element and to the fuel cell to supply fuel simultaneously to the fuel cell and to the heating element so that the heating element heats the airflow and the fuel cell produces the electrical energy necessary to power the blower and other consumers.

With respect to the reasons for rejection under the heading "35 U.S.C. 102" on page 2 of the Office Action, according to new claim 5 the apparatus claimed in claim 5 has means for jointly "connecting said fuel reservoir (10)... to said fuel cell (8) to supply said fuel (6) to said fuel cell (8)". Choi does not disclose or suggest connecting their fuel reservoir 3 to the rechargeable battery 17 (interpreted broadly in the office action as the fuel cell) to supply fuel (LPG) to the rechargeable battery 17. There is no reason to do that because the

rechargeable battery cannot utilize the LPG for any purpose at all .The rechargeable battery is renewed or reenergized by charging with an electric current, whereas the applicants' device is renewed by re-filling the fuel reservoir with liquid fuel when it is exhausted.

It is well established that each and every limitation of a claimed invention must be disclosed in a single prior art reference in order to be able to reject the claimed invention under 35 U.S.C. 102 (b) based on the disclosures in the single prior art reference. See M.P.E.P. 2131 and also the opinion in *In re Bond*, 15 U.S.P.Q. 2nd 1566 (Fed. Cir. 1990).

Choi does not disclose means for jointly connecting the fuel reservoir to the fuel cell to supply the fuel cell with fuel from the fuel reservoir and to the heating element (last paragraph of new claim 5).

Furthermore dependent claim 7 clearly defines the "means for jointly supplying fuel" as "an operating valve (11), a fuel line (20) connecting the fuel reservoir (10) with the operating valve (11), another fuel line (21) connecting the operating valve (11) with the fuel cell (8), and a further fuel line (22) connecting the operating valve (11) with the heating element (5)...".

This latter fuel valve 11 with its fuel lines 20, 21, and 22 are neither disclosed nor suggested in Choi.

In addition, new claim 9 claims particular types of fuel cells, none of which are disclosed or suggested by Choi.

For the foregoing reasons new claims 5, 7, and 9 should not be rejected as anticipated under 35 U.S.C. 102 (b) by Choi (US 5,155,925). Also dependent

claims 6, 8 and 10 should not be rejected as anticipated under 35 U.S.C. 102 (b) by Choi (US 5,155,925) because they depend on claim 5.

In addition the modifications of the disclosures in Choi that are necessary to arrive at the invention as claimed in claim 5 are not obvious from the disclosures in Choi and/or the prior art.

Furthermore new claims 5 to 10 should not be rejected as obvious under 35 U.S.C. 103 (a) over Choi.

### **III. OBVIOUSNESS REJECTION BASED ON CHOI IN VIEW OF LEVIN, et al**

Claim 3 was rejected as obvious under 35 U.S.C. 103 (a) over Choi, in view of Levin, et al.

New claim 6, which depends on claim 5, includes features from canceled claim 3.

Choi has been described above.

With respect to new claim 5, Levin, et al, is similar to Choi in that Levin, et al, discloses a cordless dryer for producing a hot air stream, in which the blower producing the air stream is powered by a rechargeable battery, not a fuel cell, at least of the type of dependent claim 10.

More specifically, the rechargeable battery of Levin, et al, is not connected with the butane cartridge 7 (i.e. the fuel supply reservoir in the apparatus of Levin as explained at column 7, line 63, to column 8, line 15) by any of the means disclosed in columns 7 and 8, such as the push-button switch means 55 in

column 7, line 16 and following, to supply the rechargeable battery in battery case 13 (Fig. 1, column 4, lines 53, and following) with butane fuel. The combustible fuel (butane) burned in the “heating element” of Levin, et al, is not supplied to a battery installed in the battery casing 13 of Levin, et al, for any purpose because no means for doing that are disclosed or suggested by Levin, et al.

Furthermore there would not be any reason to supply the battery in case 13 with butane fuel because a rechargeable battery, such as a nickel-cadmium battery mentioned in column 4, line 57 of US ‘654, is entirely different from the applicants’ fuel cell, e.g. such as those of applicants’ claim 10, and contains all the chemicals necessary to generate an electric current internally (no external fuel reservoir is necessary). The rechargeable battery of US ‘654 is renewed or replenished by charging with an electric current, whereas the fuel cell system of applicants’ new claim 5 is renewed by re-filling the fuel reservoir with the liquid fuel 6 using a filling valve as claimed in applicants’ dependent claim 9.

Levin, et al, do not suggest the modifications of the disclosures of Choi that are necessary to arrive at the invention as claimed in the new claim 5. Levin, et al, do not suggest replacing the rechargeable battery with a fuel cell or connecting the “battery” in case 13 with the fuel reservoir (butane cartridge) for the fuel that is supplied to the heating element (burner in Choi) so that the fuel will be supplied to the “battery”.

There is **no suggestion** to supply any fuel, such as butane, from the outside to the “battery” in the case 13 of Levin, et al. Thus there are no fuel lines



or other lines for input of material to the battery case 13 of Levin, et al, since none are necessary. There is no motivation for one skilled in the art to make that modification provided by the disclosures in Levin, et al.

It is well established by many U. S. judicial decisions that to reject a claimed invention under 35 U.S.C. 103 (a) there must be some hint or suggestion in the prior art of the modifications of the disclosure in a prior art reference or references used to reject the claimed invention, which are necessary to arrive at the claimed invention. For example, the Court of Appeals for the Federal Circuit has said:

"Rather, to establish obviousness based on a combination of elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant...Even when obviousness is based on as single reference there must be a showing of a suggestion of motivation to modify the teachings of that reference.." *In re Kotzab*, 55 U.S.P.Q. 2<sup>nd</sup> 1313 (Fed. Cir. 2000). See also M.P.E.P. 2141.

There is no suggestion in either Choi or Levin, et al, to replace the rechargeable batteries suggested for use in their dryers with a fuel cell or to supply fuel from the fuel reservoir for the heating element or burner to the "battery". No means or any other structures are disclosed or suggested in these references for supplying fuel to the battery for consumption of the fuel by the battery.

Thus claim 5 is not obvious under 35 U.S.C. 103 (a) from a combination of Choi and Levin, et al.

The features of new dependent claim 6 were allegedly disclosed in Levin, et al. Levin, et al, does disclose a sliding controller 17 for controlling the blower speed or power. Applicants' electrical controller 12 is a feature of a preferred embodiment that is not currently relied on to establish patentability of the claimed invention. New dependent claim 6 should be allowed because it depends on an allowable main claim 5.

For the foregoing reasons it is respectfully submitted that new claims 5 to 10 should **not** be rejected under 35 U.S.C. 103 (a) over Choi in view of Levin, et al.

#### **IV. OBVIOUSNESS REJECTION BASED ON CHOI IN VIEW OF CHANG, et al**

Claim 4 was rejected as obvious under 35 U.S.C. 103 (a) over Choi, in view of Chang, et al.

New claim 8, which depends on claim 5, contains features from canceled claim 4.

Choi has been described above in connection with the anticipation rejection. Choi does not disclose or suggest a portable hair dryer that includes a fuel cell that is supplied from an external fuel reservoir with a liquid fuel that is consumed in the fuel cell to generate electrical energy to power the blower producing the air stream. Choi also does not disclose or suggest that the same fuel from the fuel reservoir is simultaneously supplied to a heating element to produce heat to heat the air stream.

Chang, et al, does not disclose or suggest supplying the blower of their device for perfuming or conditioning the air in a room or the like with electric power that is generated by a fuel cell from fuel that is conducted from a fuel reservoir to the fuel cell and consumed by the fuel cell. Also Chang, et al, does **not** disclose or suggest heating an air stream by burning a fuel. Instead Change, et al, only discloses heating the air stream electrically with heating element 24 powered by an external source ([0043], fig. 1, claim 6).

Particularly Chang, et al, do **not** disclose or suggest the features of the last paragraph of the new claim 5:

“means (11, 20, 21, 22) for jointly connecting said fuel reservoir (10) to said catalytic heating element (5) and to said fuel cell (8) to supply said fuel (6) to said fuel cell (8) in order to produce said electrical energy (9) and to simultaneously supply said fuel (6) to said catalytic heating element (5)”.

In particular Chang, et al, do not disclose or suggest the applicants’ specific embodiment of the “means for jointly connecting” that is claimed in new dependent claim 7, namely:

“an operating valve (11), a fuel line (20) connecting the fuel reservoir (10) with the operating valve (11), another fuel line (21) connecting the operating valve (11) with the fuel cell (8), and a further fuel line (22) connecting the operating valve (11) with the heating element (5)”.

Thus applicants’ main claim 5 is not obvious under 35 U.S.C. 103 (a) from a combination of Choi with Chang, et al.

Furthermore it is respectfully submitted that the features of dependent claim 8 are features of a preferred embodiment that are not currently relied on to

establish patentability of the invention claimed in applicants' new claim 5. New dependent claim 8 should be allowed because it depends on an allowable main claim 5.

For the foregoing reasons it is respectfully submitted that new claims 5 to 10 should **not** be rejected under 35 U.S.C. 103 (a) over Choi in view of Chang, et al.

## **V. DRAWING CHANGES**

Please accept the attached single drawing sheet labeled "replacement sheet" with amended figures 1 and 2. Labels have been added to the figs. 1 and 2 in accordance with 37 C.F.R. 84 to improve the illustration of the invention by making it easier to identify the parts of the claimed invention.

Approval of the changes in figures 1 and 2 and entry of the drawing changes is respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims and/or drawing be further amended or corrected in formal respects to put this case in condition for final allowance, then it is requested that such amendments or corrections be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing the case to allowance, he or she is invited to telephone the undersigned at 1-631-549 4700.

In view of the foregoing, favorable allowance is respectfully solicited.

Respectfully submitted,

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